

Trend Study 19B-4-02

Study site name: Harker Canyon.

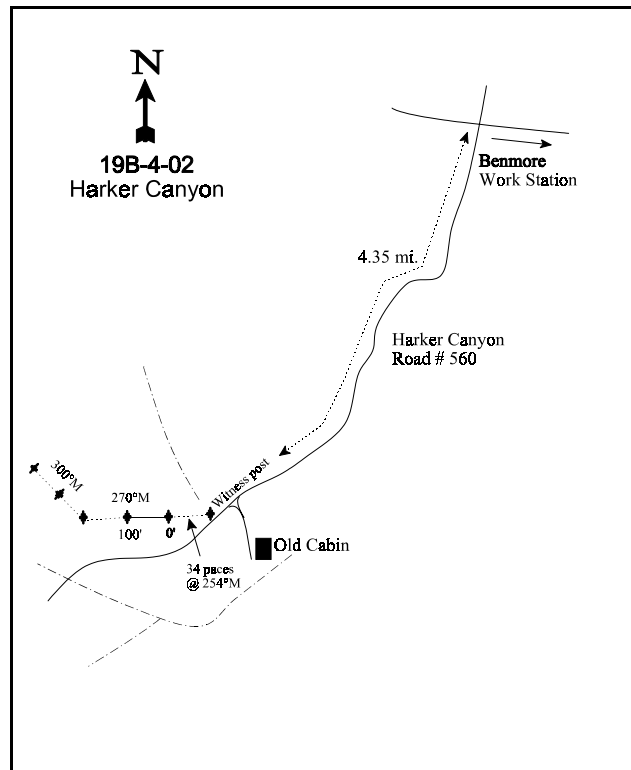
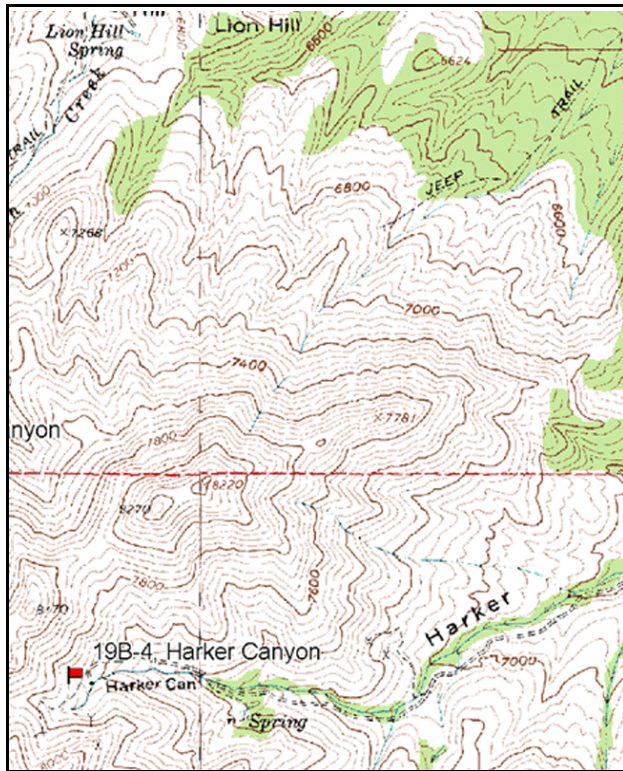
Vegetation type: Snowberry.

Compass bearing: frequency baseline 270 degrees magnetic (Line 3-4 @ 300°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 3 on 7ft, belt 4 on 1ft, and belt 5 on 1ft.

LOCATION DESCRIPTION

From the Forest Service's Benmore Work Station, proceed south 0.10 miles to a "T" intersection. Turn right at the intersection (west) for 2.0 miles to an intersection and a sign for "Harker Canyon." Turn left, heading southwest towards Harker Canyon for 4.35 miles. Just after passing an old cabin on the lefthand side of the road, look for a half high green steel "T" fencepost with a white top on the right side of the road (northeast). From the fencepost the 0-foot stake of the baseline is 34 paces away at an azimuth of 245 degrees magnetic. The study is marked by green steel "T" fenceposts approximately 12-18 inches in height.



Map Name: Erickson Knoll

Diagrammatic Sketch

Township 10S, Range 6W, Section Unsurveyed (3)

GPS: NAD 27, UTM 12S 4425980 N 371421 E

DISCUSSION

Harker Canyon - Trend Study No. 19B-4

This study samples deer summer range located near the upper end of Harker Canyon. The transect samples a mountain brush community on land administered by the Forest Service at an elevation of 7,640 feet. Aspect is to the southeast with a 35% slope. There is a perennial water source about 150 yards from the transect. Nearby, in Harker Canyon, scattered aspen and tall brush thickets provide resting and escape cover during the summer. Uphill from the study are several small knolls and ridgetops occupied by curlleaf mountain mahogany. In 1983, two mature bucks and one doe were observed, as well as a moderate number of deer pellet groups and cattle pats. Only a few deer and elk pellet groups were observed on site in 1997. During the 2002 reading, several deer were seen near the site including a couple of small bucks. A pellet group transect read on site in 2002 estimated 40 deer days use/acre (99 ddu/ha), 10 cow days use/acre (25 cdu/ha), and only one elk day use/acre (3 edu/ha). The majority of all pellets sampled appeared to be from spring.

Soil is coarse, well drained, and rocky throughout. Textural and chemical analysis indicates the soil to be a loam with a moderately acidic reactivity (pH of 6.0). In 1997, the effective rooting depth was estimated at 13 inches with an average soil temperature of 54°F measured at 14 inches in depth. Organic matter content is moderately high at 5.4%. It was reported in the past that erosion was negligible as there was little bare ground and abundant vegetation and litter cover. Most signs of erosion occurred on animal trails that zig-zag through the area. With drought in 2002, cover of both vegetation and litter declined, and bare ground increased from 3% to 24%. This resulted in the ratio of protective cover (vegetation, litter, and cryptogams) to bare soil declining from very good (7.3:1) to marginal (2.6:1). Both surface litter and soil movement were noted during the 2002 reading. The erosion condition classification was stable to slight in 2002.

The vegetative community is dominated by the browse component. Although mountain snowberry is the most abundant browse on the site, several less abundant but more preferred species also occur including serviceberry, mountain big sagebrush, curlleaf mountain mahogany, and bitterbrush. Of these, only serviceberry and mountain big sagebrush were sampled in abundant numbers on the transect. Curlleaf mahogany occurs as large, scattered plants above the transect. The mountain snowberry population had an estimated density of 2,620 plants/acre in 1997, increasing to 3,000 plants/acre in 2002. This is a mostly mature population with 90% of the plants encountered classified as mature in both 1997 and 2002. Decadence was low in 1997 and 2002 at 2% and 9% respectively. Decadence peaked at 34% in 1989 which was a drought year. Utilization has been light, although a quarter of the population displayed poor vigor in 2002 due to a combination of drought and crickets.

Saskatoon serviceberry density increased from 560 plants/acre to 800 plants/acre between 1997 and 2002. Utilization on this species was light in 1983 and 1989, light to moderate in 1997, and moderate to heavy in 2002. Vigor was normal throughout the population during the first three readings, but with drought in 2002, 38% of the population displayed poor vigor. As with snowberry, a combination of leaf drop due to drought and browsing by crickets resulted in plants being categorized as having reduced vigor. Annual leader growth on serviceberry averaged about two inches in 2002.

Mountain big sagebrush density has fluctuated between years. The initial density estimate was 1,066 plants/acre in 1983. Density was estimated at 1,540 plants/acre in 1997, declining to 560 plants/acre in 2002. The decline in population in 2002 was the result of an increased number of dead, as well as the loss of the young age class due to drought. Utilization on mountain big sagebrush has been minimal in all years, except 1983, when 69% of the population showed moderate browsing. In 1989, it was noted that seed production was excellent although this was not the case in 2002. Decadence peaked at 50% in 1989, declining to 8% in 1997 and 21% in 2002. The proportion of the population classified in poor vigor has ranged between 11-17% in all readings. Annual sagebrush leader growth averaged 1.8 inches in 2002.

The site supports many other less preferred browse including Martin ceanothus, stickleaf low rabbitbrush, whorled buckwheat, Oregon grape, mountain lover, and Wood's rose. Some of these species have seen drastic oscillations in density over the years due mostly to the greatly increased sample used in 1997 and 2002. It was noted in 2002, that as a whole, many of the browse species had been defoliated by a combination of drought and crickets.

The herbaceous understory has been diverse and abundant throughout the years. Perennial grass sum of nested frequency increased between 1983 and 1989, but decreased in 1997 and 2002. Oniongrass, spike fescue, mutton bluegrass, and mountain brome are the most abundant species. Cheatgrass was encountered in only one quadrat in 1997. It was not sampled in 2002. In 2002, grasses and forbs were dried out and crickets had already heavily utilized many plants making identification difficult.

Perennial forbs show the same trend as grasses. Sum of nested frequency increased between 1983 and 1989, but declined in both readings since. The decline in 2002 is not surprising due to the drought. This decline occurred on most other sites in the unit. The most abundant species prior to 2002 were wild onion, tapertip hawksbeard, silky lupine, longleaf phlox, and mulesear wyethia. As this is summer range, forbs are especially important to deer so maintenance of forb density and composition quality is important on this site. Hopefully the forb component will improve with better precipitation.

1983 APPARENT TREND ASSESSMENT

The soil trend appears to be stable. Soil condition is good and shows no immediate signs of deterioration. The browse composition is favorable, although there may be a trend towards a thickening of some shrub populations, especially mountain snowberry. The browse trend appears stable. The herbaceous understory is diverse and productive and will likely remain so, unless subjected to substantially heavier grazing rates. The herbaceous understory trend appears stable.

1989 TREND ASSESSMENT

The soil trend is slightly upward with an increase in percent vegetation cover and a decrease in percent bare ground cover. The browse trend is stable, although there are some changes in population densities. Percent decadency has increased to 50% in the mountain big sagebrush population, while density has declined to 800 plants/acre. However, densities of serviceberry and snowberry have increased. The herbaceous understory trend is upward with a large increase in herbaceous sum of nested frequency. There is a large diversity of forbs. There was no changes in composition or appearance of undesirable increasers.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable (3)

herbaceous understory - up (5)

1997 TREND ASSESSMENT

The soil trend is slightly upward with a decrease in percent bare ground cover to 3% and there is little evidence of erosion at this time. The browse trend is stable overall. The sagebrush appears to be on the decline, but it only provides 6% of the browse cover at this time. Most populations do not appear to be expanding and they exhibit good vigor. Several additional species were encountered with the increased sample size. The herbaceous understory trend is slightly down for perennial grasses and downward with a large decrease in perennial forb sum of nested frequency. Overall trend for the herbaceous understory is considered down due to the importance of the forb component on deer summer range.

TREND ASSESSMENT

soil - slightly up (4)

browse - stable overall, but declining for sagebrush which is a minor browse component (3)

herbaceous understory - down (1)

2002 TREND ASSESSMENT

Trend for soil is down. Drought conditions have caused dramatic changes in surface soil conditions including decreases in both vegetation and litter cover, and a large increase in bare ground. Erosion was apparent in 2002 even with low precipitation. Trend for browse is stable, but most browse populations are in poor condition. The serviceberry and snowberry populations increased, while mountain big sagebrush showed further declines. Young sagebrush were abundant in 1997 (880 plants/acre), but none were sampled in 2002 with the drought. Serviceberry and snowberry show increased poor vigor, while mountain big sagebrush remained stable in that category. Decadence increased for both mountain big sagebrush and snowberry, but this is expected during drought and the current levels are well within acceptable levels. All three species show decreased reproduction, but this is also expected with drought and should improve with better precipitation. Trend for the herbaceous understory is down. Sum of nested frequency for grasses and forbs declined. The decline in forbs is critical on this important deer summer range.

TREND ASSESSMENT

soil - down (1)

browse - stable, but in poor condition (3)

herbaceous understory - down (1)

HERBACEOUS TRENDS --

Herd unit 19B, Study no: 4

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	_a 1	_b 29	_{ab} 16	_{ab} 13	1	15	6	7	.49	.40
G	Agropyron trachycaulum	_a 8	_b 61	_a 6	_a -	4	27	2	-	.06	-
G	Bromus carinatus	_a 44	_b 81	_b 103	_{ab} 61	20	42	39	26	3.81	1.21
G	Bromus tectorum (a)	-	-	2	-	-	-	1	-	.00	-
G	Carex spp.	-	-	-	4	-	-	-	1	-	.38
G	Festuca ovina	-	-	3	-	-	-	1	-	.03	-
G	Leucopoa kingii	_a 41	_a 61	_b 114	_b 107	18	25	39	44	5.06	4.92
G	Melica bulbosa	243	224	179	197	86	85	62	71	6.02	5.75
G	Poa fendleriana	_a 16	_{ab} 28	_{bc} 46	_c 75	6	12	22	30	1.27	1.32
G	Poa pratensis	_a 6	_b 26	_{ab} 20	_a 2	3	12	8	1	.26	.03
G	Poa secunda	_a 2	_b 26	_{ab} 13	_a -	1	11	5	-	.24	-
G	Stipa columbiana	1	11	1	-	1	4	1	-	.00	-
G	Stipa lettermani	4	6	1	-	3	2	1	-	.00	-
Total for Annual Grasses		0	0	2	0	0	0	1	0	0.00	0
Total for Perennial Grasses		366	553	502	459	143	235	186	180	17.27	14.03
Total for Grasses		366	553	504	459	143	235	187	180	17.28	14.03
F	Agoseris glauca	_b 15	_a 2	_a -	_a -	7	1	-	-	-	-
F	Alyssum alyssoides (a)	-	-	_b 19	_a -	-	-	10	-	.07	-
F	Allium spp.	_b 87	_c 124	_{bc} 118	_a -	40	62	54	-	.52	-
F	Arabis spp.	-	-	2	-	-	-	2	-	.01	-
F	Aster chilensis	_b 20	_c 84	_{ab} 7	_a -	10	31	2	-	.03	-
F	Astragalus cibarius	_b 10	_b 5	_{ab} 1	_a -	5	5	1	-	.00	-

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Balsamorhiza hookeri	3	-	-	-	2	-	-	-	-	-
F	Balsamorhiza sagittata	-	-	-	1	-	-	-	1	-	.18
F	Calochortus nuttallii	-	3	7	-	-	1	4	-	.02	-
F	Chaenactis douglasii	-	-	1	-	-	-	1	-	.00	-
F	Cirsium spp.	a ⁻	b ¹²	ab ¹	a ⁻	-	5	1	-	.23	-
F	Collomia linearis (a)	-	-	b ³⁸	a ⁻	-	-	14	-	.09	-
F	Collinsia parviflora (a)	-	-	b ³¹	a ⁻	-	-	12	-	.08	-
F	Crepis acuminata	b ⁶⁵	c ¹⁴³	b ⁴⁶	a ⁻	35	61	26	-	.56	-
F	Cruciferae	a ⁻	b ³⁰	a ⁻	a ⁻	-	14	-	-	-	-
F	Delphinium nuttallianum	-	-	4	3	-	-	2	1	.01	.03
F	Erigeron eatonii	b ²²	b ¹⁶	a ⁻	a ⁻	13	7	-	-	-	-
F	Eriogonum racemosum	ab ¹⁴	b ¹⁷	ab ²⁰	a ³	7	11	8	3	.55	.06
F	Eriogonum umbellatum	c ⁵³	b ³²	a ³	a ²	25	14	1	1	.00	.00
F	Fritillaria pudica	5	7	-	-	3	4	-	-	-	-
F	Hackelia patens	5	-	2	-	5	-	1	-	.00	-
F	Helianthella uniflora	9	9	-	2	4	4	-	1	-	.15
F	Hydrophyllum capitatum	b ³⁵	a ³	a ⁻	a ⁻	17	2	-	-	-	-
F	Lomatium spp.	b ¹⁵	b ³⁰	b ²⁷	a ⁻	9	16	11	-	.18	-
F	Lupinus sericeus	c ¹⁵⁵	c ¹⁶⁰	b ⁶⁸	a ⁻	71	66	36	-	1.45	-
F	Machaeranthera canescens	1	8	3	-	1	3	1	-	.00	-
F	Microsteris gracilis (a)	-	-	b ¹⁰	a ⁻	-	-	5	-	.05	-
F	Penstemon caespitosus	-	2	3	-	-	1	1	-	.00	-
F	Petradoria pumila	-	-	-	-	-	-	-	-	-	.00
F	Phlox longifolia	b ⁴⁷	c ⁸⁷	b ³⁷	a ⁻	23	37	16	-	.22	-
F	Polygonum douglasii (a)	-	-	b ⁸⁵	a ²	-	-	33	1	.41	.00
F	Senecio integerrimus	a ⁻	b ²⁶	a ⁻	a ³	-	15	-	1	-	.03
F	Taraxacum officinale	a ⁻	b ¹⁹	a ³	a ⁻	-	10	1	-	.03	-
F	Veronica biloba (a)	-	-	1	-	-	-	1	-	.00	-
F	Viola spp.	2	3	-	1	2	2	-	1	-	.00
F	Wyethia amplexicaulis	b ⁴⁹	c ⁷⁴	ab ³⁵	a ²⁷	23	36	14	12	2.80	1.05
F	Zigadenus paniculatus	7	1	2	-	4	1	1	-	.03	-
Total for Annual Forbs		0	0	184	2	0	0	75	1	0.72	0.00
Total for Perennial Forbs		619	897	390	42	306	409	184	21	6.71	1.52
Total for Forbs		619	897	574	44	306	409	259	22	7.43	1.52

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Herd unit 19B, Study no: 4

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Amelanchier alnifolia	21	27	3.65	4.08
B	Artemisia tridentata vaseyana	30	22	1.87	3.67
B	Cercocarpus ledifolius	0	1	.45	-
B	Ceanothus martinii	9	0	.60	-
B	Cercocarpus montanus	0	1	-	-
B	Chrysothamnus nauseosus albicaulis	3	0	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	20	11	1.19	.13
B	Eriogonum heracleoides	22	33	1.49	1.08
B	Mahonia repens	16	13	.78	.45
B	Pachistima myrsinites	0	9	-	.64
B	Rosa woodsii	10	7	.06	.09
B	Symphoricarpos oreophilus	55	71	22.89	19.06
Total for Browse		186	195	32.99	29.23

CANOPY COVER -- LINE INTERCEPT

Herd unit 19B, Study no: 4

Species	Percent Cover	
	'97	'02
Amelanchier alnifolia	-	6.25
Artemisia tridentata vaseyana	-	3.50
Cercocarpus ledifolius	1	6.33
Chrysothamnus viscidiflorus viscidiflorus	-	.17
Eriogonum heracleoides	-	2.58
Mahonia repens	-	.42
Pachistima myrsinites	-	.75
Rosa woodsii	-	.33
Symphoricarpos oreophilus	-	25.58

Key Browse Annual Leader Growth

Herd unit 19B , Study no: 4

Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.8
Amelanchier utahensis	1.9
Cercocarpus ledifolius	2.5

BASIC COVER --

Herd unit 19B, Study no: 4

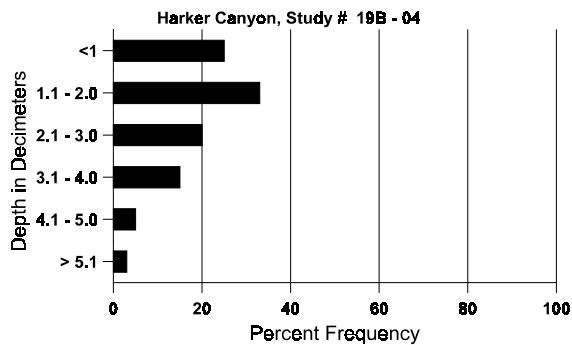
Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	358	318	1.75	18.50	61.45	41.98
Rock	151	229	3.50	5.50	4.61	9.05
Pavement	160	287	3.00	4.50	2.66	9.95
Litter	393	365	72.25	61.50	65.00	36.07
Cryptogams	5	3	.25	0	.01	.38
Bare Ground	104	267	19.25	10.00	2.91	23.61

SOIL ANALYSIS DATA --

Herd Unit 19B, Study no: 4, Harker Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
13.1	54.0 (14.3)	6.0	46.3	31.1	22.6	5.4	21.2	342.4	0.6

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 19B, Study no: 4

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre 02	Days Use per Acre (ha) 02
Elk	2	-	17	1 (3)
Deer	6	11	522	40 (99)
Cattle	-	5	122	10 (25)

BROWSE CHARACTERISTICS --

Herd unit 19B, Study no: 4

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Amelanchier alnifolia																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	2	-	-	-	-	-	-	-	-	-	-	-	-	133		2	
	97	3	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	02	2	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
M	83	5	-	-	-	-	-	-	-	-	5	-	-	-	333	39	35	5
	89	12	-	-	-	-	-	-	-	-	12	-	-	-	800	55	31	12
	97	14	7	1	2	-	-	-	-	-	24	-	-	-	480	55	51	24
	02	8	8	8	-	2	10	1	1	-	22	1	15	-	760	47	43	38
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+74%							
'89		00%			00%			00%			-56%							
'97		25%			04%			00%			+30%							
'02		25%			45%			38%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	333	Dec:	0%			
												'89	1266		26%			
												'97	560		4%			
												'02	800		0%			
Artemisia tridentata vaseyana																		
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	97	43	-	-	-	-	-	1	-	-	44	-	-	-	880		44	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	3	9	-	-	-	-	-	-	-	8	2	2	-	800	26	30	12
	89	4	-	-	-	-	-	-	-	-	3	1	-	-	266	24	39	4
	97	23	2	1	1	-	-	-	-	-	18	1	8	-	540	26	33	27
	02	22	-	-	-	-	-	-	-	-	22	-	-	-	440	22	35	22
D	83	1	2	-	-	-	-	-	-	-	3	-	-	-	200		3	
	89	6	-	-	-	-	-	-	-	-	4	-	2	-	400		6	
	97	6	-	-	-	-	-	-	-	-	4	-	-	2	120		6	
	02	6	-	-	-	-	-	-	-	-	3	-	-	3	120		6	
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	240		12	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	300		15	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		69%			00%			13%			-25%							
'89		00%			00%			17%			+48%							
'97		03%			01%			13%			-64%							
'02		00%			00%			11%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	1066	Dec:	19%			
												'89	799		50%			
												'97	1540		8%			
												'02	560		21%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cercocarpus ledifolius																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	157	177	0
	02	-	-	-	-	-	-	-	-	1	-	1	-	-	20	161	236	1
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%								
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	0		-			
												'02	20		-			
Ceanothus martinii																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	12	-	-	1	-	-	-	-	-	13	-	-	-	260			13
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	14	1	-	1	-	-	-	-	-	16	-	-	-	320	8	18	16
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		03%				00%				00%								
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	580		-			
												'02	0		-			
Cercocarpus montanus																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	1	-	-	-	-	-	-	-	-	-	-	1	-	20	51	70	1
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%								
'02		00%				00%				100%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	0		-			
												'02	20		-			

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus nauseosus albicaulis																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	1	1	2	-	-	-	-	-	-	3	-	1	-	80		4	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%										
'89		00%			00%			00%										
'97		25%			50%			25%										
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	80		-			
												'02	0		-			
Chrysothamnus viscidiflorus viscidiflorus																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	97	6	-	-	2	-	-	-	-	-	8	-	-	-	160		8	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	10	-	-	-	-	-	-	-	-	10	-	-	-	666	12 10	10	
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	533	16 14	8	
	97	29	-	-	1	-	-	-	-	-	30	-	-	-	600	16 17	30	
	02	5	-	-	1	-	-	-	-	-	5	-	1	-	120	10 12	6	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	5	-	-	2	-	-	-	-	-	3	-	-	4	140		7	
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+ 0%							
'89		00%			00%			00%			+12%							
'97		00%			00%			00%			-66%							
'02		00%			00%			38%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	666	Dec:	0%			
												'89	666		0%			
												'97	760		0%			
												'02	260		54%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Cowania mexicana stansburiana																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	11	70	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%								
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83		0	Dec:		-	
												'89		0			-	
												'97		0			-	
												'02		0			-	
Eriogonum heracleoides																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	46	-	-	-	-	-	-	-	-	46	-	-	-	920	15	14	46
	02	52	14	2	1	-	-	-	-	-	63	1	5	-	1380	7	14	69
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	5	2	2	-	-	-	-	-	-	6	-	-	3	180			9
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%				+41%				
'02		21%				05%				10%								
Total Plants/Acre (excluding Dead & Seedlings)												'83		0	Dec:		0%	
												'89		0			0%	
												'97		920			0%	
												'02		1560			12%	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Mahonia repens																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	97	15	-	-	-	-	-	-	-	-	-	-	-	-	300		15	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	83	10	-	-	-	-	-	-	-	-	10	-	-	-	666	8	7	
	89	7	-	-	-	-	-	-	-	-	7	-	-	-	466	3	3	
	97	72	-	-	-	-	-	22	-	-	94	-	-	-	1880	4	6	
	02	38	-	-	-	-	-	14	-	-	52	-	-	-	1040	3	4	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	1	-	-	-	-	-	-	-	-	-	-	1	-	66		1	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change							
'83		00%			00%			00%			-20%							
'89		00%			00%			13%			+76%							
'97		00%			00%			00%			-52%							
'02		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	666	Dec:	0%			
												'89	532		12%			
												'97	2180		0%			
												'02	1040		0%			
Pachistima myrsinites																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	16	-	-	-	-	-	-	-	-	16	-	-	-	1066		16	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	95	2	-	-	-	-	-	-	-	97	-	-	-	6466		97	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	6	3	-	-	-	-	-	-	-	9	-	-	-	180		9	
M	83	6	-	-	-	-	-	-	-	-	6	-	-	-	400	16	49	
	89	47	25	8	15	4	-	6	-	-	105	-	-	-	7000	10	9	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	02	33	-	-	-	-	-	2	-	-	35	-	-	-	700	3	6	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	89	7	3	5	3	1	-	-	-	-	16	-	2	1	1266		19	
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change							
'83		00%			00%			00%			+97%							
'89		16%			06%			01%										
'97		00%			00%			00%										
'02		07%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	400	Dec:	0%			
												'89	14732		9%			
												'97	0		0%			
												'02	880		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Purshia tridentata																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	35	61	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%								
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	0		-			
												'02	0		-			
Rosa woodsii																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	16	-	-	8	-	-	-	-	-	24	-	-	-	480			24
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	20	-	-	-	-	-	-	-	-	20	-	-	-	400	9	8	20
	02	16	-	-	-	-	-	-	-	-	16	-	-	-	320	9	8	16
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'83		00%				00%				00%								
'89		00%				00%				00%								
'97		00%				00%				00%				-52%				
'02		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'83	0	Dec:	-			
												'89	0		-			
												'97	880		-			
												'02	420		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	89	3	-	-	-	-	-	-	-	-	3	-	-	200			3	
	97	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	02	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	89	8	-	-	-	-	-	-	-	-	8	-	-	533			8	
	97	8	-	-	2	-	-	-	-	-	10	-	-	200			10	
	02	1	-	-	-	-	-	-	-	-	1	-	-	20			1	
M	83	15	-	-	-	-	-	-	-	-	15	-	-	1000	32	31	15	
	89	13	-	-	-	-	-	-	-	-	12	-	1	866	27	35	13	
	97	94	-	-	24	-	-	-	-	-	118	-	-	2360	33	64	118	
	02	109	-	-	20	-	-	7	-	-	102	-	32	2720	27	45	136	
D	83	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	89	11	-	-	-	-	-	-	-	-	11	-	-	733			11	
	97	3	-	-	-	-	-	-	-	-	1	-	-	60			3	
	02	11	1	-	1	-	-	-	-	-	11	-	2	260			13	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'83		00%			00%			00%			+53%							
'89		00%			00%			03%			+19%							
'97		00%			00%			02%			+13%							
'02		.66%			00%			24%										
Total Plants/Acre (excluding Dead & Seedlings)												'83	1000	Dec:	0%			
												'89	2132		34%			
												'97	2620		2%			
												'02	3000		9%			